



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/067,333	02/07/2002	Yoshiyuki Hirayama	HITA.0161	4593
7590 06/18/2004			EXAMINER	
Stanley P. Fisher Reed Smith Hazel & Thomas LLP 3110 Fairview Park Drive, Suite 1400 Falls Church, VA 22042-4503			RICKMAN, HOLLY C	
			ART UNIT	PAPER NUMBER
			1773	

DATE MAILED: 06/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/067,333

Applicant(s)

HIRAYAMA ET AL.

Examiner

Holly Rickman

Art Unit

1773

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/4/04 has been entered.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 11 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The original disclosure fails to provide support for the claim limitation "further consists of Co, Pt, and Cr without B." While there are examples in the specification of alloys that do not contain B, the specification fails to provide support for the concept of an alloy consisting of CoPtCr *specifically excluding B*.

Art Unit: 1773

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 11 is rendered indefinite by the phrase "further consists of Co, Pt, and Cr without B." This limitation is indefinite because claim 11 depends from claim 1 which is limited to a magnetic layer "consisting of Co, Pt, and Cr." Thus, the magnetic layer is closed to *all* unrecited components. Therefore, the addition of the caveat "without B" does not make sense.

***Claim Rejections - 35 USC § 102***

6. The rejection of claims 1-3, 5-6, and 8-9 under 35 U.S.C. 102(e) as being anticipated by Fullerton et al. (US 6383668) is withdrawn in view of Applicant's amendments and arguments.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-3, 5-6, and 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Girt et al. (US 6645614).

Girt et al. disclose a magnetic recording medium having an underlayer of CrTi formed on a NiP-plated substrate, a first ferromagnetic layer, a Ru intermediate layer, and a second ferromagnetic layer formed thereon. The magnetic layers are antiferromagnetically coupled across the Ru layer having a thickness of 0.8 nm (col. 7, line 24 to col. 8, line 22). The reference teaches that the ferromagnetic layers are formed from CoCrPt (col. 3, line 65 to col. 4, line 6). The reference gives an example wherein the amount of Pt present in the CoCrPt is 10 atomic percent but states that antiferromagnetic coupling decreases with an increase in the amount of Pt as illustrated using examples with 0 at% Pt and 10 at% Pt.

Thus, it would have been obvious to one of ordinary skill in the art at the time of invention to determine the optimal concentration of Pt in the CoCrPt magnetic layers in order to provide maximum antiferromagnetic coupling between magnetic layers. Such an optimization would have been obvious because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

9. The rejection of claim 4 under 35 U.S.C. 103(a) as being unpatentable over Fullerton et al. (US 6383668) in view of Wang et al. (US 2002/0098389) is withdrawn.

10. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Girt et al. (US 6645614) in view of Wang et al. (US 2002/0098389).

Girt et al. teach all of the limitations of the claim, as detailed above, except for the use of CrTiB underlayer in place of the CrTi layer taught therein.

Wang et al. teach the equivalence of CrTi and CrTiB for use as underlayers in magnetic recording media underneath Co alloy layers (see claim 5).

It would have been obvious to one of ordinary skill in the art at the time of invention to substitute CrTiB for the CrTi layer taught by Girt et al. in view of the functional equivalence of the two materials.

11. The rejection of claim 7 under 35 U.S.C. 103(a) as being unpatentable over Fullerton et al. (US 6383668) in view of Sakawaki et al. (US 2002/0160234).

12. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Girt et al. (US 6645614) in view of Sakawaki et al. (US 2002/0160234).

Girt et al. teach all of the limitations of the claim, as detailed above, except for the use of an amorphous film containing Ta and Ni formed between the substrate and the CrTi layer.


Sakawaki et al. teach the use of NiTa as an orientation determining layer under a Cr-based underlayer wherein the NiTa layer causes the Cr underlayer to have predominant orientation plane of (200) plane thus allowing the overlying magnetic layers to have a (110) orientation (paragraphs [0031]-[0038]).

It would have been obvious to one of ordinary skill in the art at the time of invention to add a NiTa layer underneath the CrTi layer taught by Girt et al. in order to provide the recording medium with the preferred (200) orientation for the underlayer and the preferred (110) orientation for the magnetic layers.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Holly Rickman whose telephone number is (571) 272-1514. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul J. Thibodeau can be reached on (571) 272-1516. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Holly Rickman  
Primary Examiner  
Art Unit 1773

hr  
June 10, 2004